AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended)   A method for determining a mutual time difference of signals transmitted between a first base station ~~signals~~ and a second base station in an asynchronous code division multiplexing access (CDMA) system, the asynchronous CDMA system having at least one other base station and forming at least three pairs of two adjacent base stations, the method comprising the steps of:

(a) for each pair of the at least three pairs of two adjacent base stations, measuring ~~mutual~~ time difference of signals transmitted between ~~at least~~ two adjacent base stations of said pair, obtaining an adjusted time difference corresponding to said pair, and obtaining an accuracy of the adjusted time difference;

(b) determining a set of all possible paths between said ~~at least two base stations~~ first base station and said second base station, wherein each path of said set of all possible paths comprises at least one pair of two adjacent base stations; and

(c) providing weights to ~~the measured mutual~~ the obtained adjusted time differences corresponding to pair(s) of two adjacent base stations included in each path of said set of all possible paths ~~for said all possible paths~~.

2. (Currently Amended)   The method as claimed in claim 1, wherein, for each pair of the at least three pairs of two adjacent base stations, each of the signals transmitted between ~~said at least two base stations~~ two adjacent base stations of said pair is transmitted through a common pilot channel.

3. (Currently Amended) The method as claimed in claim 1, wherein, for each pair of the at least three pairs of two adjacent base stations, step (a) comprises the substeps of:

sequentially measuring ~~mutual~~ the time difference of the signals when received; and

averaging measurements of the ~~mutual~~ time difference, thereby obtaining an average of the measured time difference, ~~for the signals~~ the average of the measured time difference being used as a basis to determine the adjusted time difference corresponding to said pair.

4. (Currently Amended)   The method as claimed in claim 3, wherein, for each pair of the at least three pairs of two adjacent base stations, step (a) further comprises a substep of determining [[an]]the accuracy of the ~~averaged measured~~ adjusted time difference corresponding to said pair by means of a signal to noise ratio, so as to measure an error between [[the]]a measured ~~mutual~~ time difference and the ~~average of the measured mutual~~ adjusted time difference.

5. (Currently Amended)   The method as claimed in claim 3, wherein, for each pair of the at least three pairs of two adjacent base stations, the ~~average of the measured mutual~~ adjusted time difference corresponding to said pair is compensated by subtracting a difference of delays at line of sight signal from the ~~average of the measured mutual~~ adjusted time difference, said line of sight signal propagating between ~~said at least~~ two adjacent base stations of said pair.

6. (Currently Amended)   The method as claimed in claim 5, wherein, for each pair of the at least three pairs of two adjacent base stations, the difference of delays at line of sight signal is obtained by equations,

$$\tau_{i \to k} = \frac{\sqrt{(x_i - x_k)^2 + (y_i - y_k)^2 + (z_i - z_k)^2}}{c} \text{ and}$$

$$\tau_{j \to k} = \frac{\sqrt{(x_j - x_k)^2 + (y_j - y_k)^2 + (z_j - z_k)^2}}{c}, \text{ in which}$$

c is the light speed, a first base station of said pair coordinates with x_i, y_i, z_i, a second base station of said pair coordinates with x_j, y_j, z_j, and a location measurement unit coordinates with x_k, y_k, z_k.

7. (Currently Amended)   The method as claimed in claim 1, ~~wherein step (a) comprises the substeps of:~~ wherein steps (b) and (c) comprises the substeps of:

(1) receiving ~~information about~~ the adjusted time differences obtained in step (a) and the ~~accuracy~~ accuracies of the adjusted time differences obtained in step (a);

(2) forming [[a]]the set of all possible paths between said ~~at least two base stations~~ first base station and said second base station;

(3) for each path of ~~each formed~~ said set of all possible paths, forming a path vector listing the obtained adjusted time difference(s) ~~differences of signals of the~~ corresponding to pair(s) of two adjacent base stations included in this path and determining a metric of the path vector;

(4) selecting a group of path vectors ~~for each pair of base stations~~ from the ~~set of all possible~~ all path vectors formed in step (3) ~~of this pair of base stations~~, wherein the selected group of [[the]] path vectors contains each of the obtained adjusted time differences;

(5) forming weights ~~of the~~ for each of the obtained adjusted time differences ~~of signals of base stations for each pair of base stations~~ using the selected group of path vectors ~~of these base stations~~ and the obtained accuracies ~~of~~ of the obtained adjusted time differences ~~of signals of the base stations~~; and

(6) determining [[a]]the mutual time difference ~~of signals of each pair of base stations~~ as a weighted sum of all of the obtained adjusted time differences ~~of signals of base stations~~, wherein the weights of the obtained adjusted time differences ~~of signals of the base stations formed for the pair of base stations~~ are used as weights.

8. (Currently Amended)   The method as claimed in claim 1, wherein, for each pair of the at least three pairs of two adjacent base stations, the ~~measured mutual~~ adjusted time difference corresponding to said pair ~~of signals~~ and [[its]] the accuracy of the adjusted time difference are transmitted through one of ~~said at least two base stations~~ two adjacent base stations of said pair to a base station controller.

9. (Currently Amended)   The method as claimed in claim 1, wherein, for each pair of the at least three pairs of two adjacent base stations, the ~~measured mutual~~

adjusted time difference corresponding to said pair of signals and [[its]] the accuracy of the adjusted time difference are transmitted from the base station controller to a mobile user location center for calculating the mutual time difference of the signals.

10. (Currently Amended)   The method as claimed in claim 7, wherein, in step (4), a number of applications of each obtained adjusted time difference of the selected group of path vectors does not exceed a number of applications of this each obtained adjusted time difference of any other group of path vectors obtained from the set of all possible path vectors, and values of path vector metrics of the selected group do not exceed values of path vector metrics of any other path vector group obtained from the set of all possible path vectors.

11. (Currently Amended) The method as claimed in claim 1, wherein said all possible paths refer to paths between base stations said first base station and said second base station are adjacent to a terminal which is an object of the measurement.

12. (Currently Amended) The method as claimed in claim 11, wherein the paths at least one path of said set of all possible paths between the base stations said first base station and said second base station adjacent to the terminal includes non-line-of-sight multipaths.

13. (Currently Amended) The method as claimed in claim 1, wherein, for paths of said set of all possible paths, the weights are provided according to errors of the measured mutual obtained adjusted time differences corresponding to said paths.

14. (Currently Amended)   An apparatus A timing system for determining a mutual time difference between base station of signals transmitted between a first base station and a second base station in an asynchronous code division multiplexing access (CDMA) system, the asynchronous CDMA system having at least one other

base station and forming at least three pairs of two adjacent base stations, the
~~apparatus~~ timing system comprising:

a plurality of location measurement unit_s, each for measuring ~~mutual~~ time
difference of signals transmitted between ~~at least two base stations~~ at least one pair of
two adjacent base stations, obtaining an adjusted time difference corresponding to said
at least one pair, and obtaining an accuracy of the adjusted time difference;

a mobile user location center for receiving ~~the mutual~~ the adjusted time
differences, each ~~of the signals measured~~ obtained by one of the plurality of the
location measurement unit_s, determining a set of all possible paths between said ~~at
least two base stations~~ first base station and said second station wherein each path of
said set of all possible paths comprises at least one pair of two adjacent base stations,
and providing weights to the ~~measured mutual~~ adjusted time difference(s) ~~difference
for said all possible paths~~ corresponding to pair(s) of two adjacent base stations
included in each path of said set of all possible paths.

15. (Currently Amended)   The ~~apparatus~~ timing system as claimed in claim
[[11]]14, wherein, for each pair of the at least three pairs of two adjacent base stations,
each of the signals transmitted between ~~said at least~~ two adjacent base stations of said
pair is transmitted through a common pilot channel.

16. (Currently Amended)   The ~~apparatus~~ timing system as claimed in claim
[[11]]14, wherein each of the plurality of location measurement unit_s sequentially
measures ~~mutual~~ time difference of the signals transmitted between the at least one
pair of two adjacent base stations when received, and averages measurements of the
~~mutual~~ time difference, thereby obtaining an average of the measured time difference
for the signals, the average of the measured time difference being used as a basis to
determine the adjusted time difference corresponding to said at least one pair.

17. (Currently Amended)   The ~~apparatus~~ timing system as claimed in claim
[[13]]16, wherein each of the plurality of [[the]] location measurement unit_s
determines [[an]]the accuracy of the ~~averaged measured~~ adjusted time difference by

means of a signal to noise ratio, so as to measure an error between the measured mutual time difference and the ~~average of the measured mutual~~ adjusted time difference.

18. (Currently Amended) The ~~apparatus~~ timing system as claimed in claim [[13]]16, wherein each of the plurality of [[the]] location measurement unit_s compensates the average of the ~~measured mutual~~ adjusted time difference by subtracting a difference of delays at line of sight signal from the average of the measured mutual time difference, said line of sight signal propagating between ~~said at least~~ two adjacent base stations of said pair.

19. (Currently Amended) The ~~apparatus~~ timing system as claimed in claim [[15]]18, wherein the location measurement unit calculates the difference of delays at line of sight signal by means of equations,

$$\tau_{i->k} = \frac{\sqrt{(x_i - x_k)^2 + (y_i - y_k)^2 + (z_i - z_k)^2}}{c} \quad \text{and}$$

$$\tau_{j->k} = \frac{\sqrt{(x_j - x_k)^2 + (y_j - y_k)^2 + (z_j - z_k)^2}}{c} \quad \text{, in which}$$

c is the light speed, a first base station of said pair coordinates with x_i, y_i, z_i, a second base station of said pair coordinates with x_j, y_j, z_j, and a location measurement unit coordinates with x_k, y_k, z_k.

20. (Currently Amended) The ~~apparatus~~ timing system as claimed in claim [[11]]14, wherein the mobile user location center performs:

receiving ~~information about~~ the adjusted time difference_s obtained in the plurality of location measure units and the ~~accuracy~~ accuracies of the adjusted time differences obtained in the plurality of location measure units ;

forming [[a]]the set of all possible paths between said ~~at least two base stations~~ first station and said second station;

for each path of each formed said set of all possible paths, forming a path vector listing the obtained adjusted time difference(s) differences of signals of the corresponding to pair(s) of two adjacent base stations included in this path and determining a metric of the path vector;

selecting a group of path vectors for each pair of base stations from the set of all possible all path vectors already formed of this pair of base stations, wherein the selected group of the path vectors contains each of the obtained adjusted time differences;

forming weights of the for each of the obtained adjusted time differences of signals of base stations for each pair of base stations using the selected group of path vectors of these base stations and the obtained accuracies of the adjusted time differences of signals of the base stations; and

determining [[a]]the mutual time difference of signals of each pair of base stations as a weighted sum of all the obtained adjusted time differences of signals of base stations, wherein the weights of the adjusted time differences of signals of the base stations formed for the pair of base stations are used as weights.

21. (Currently Amended)   The apparatus timing system as claimed in claim [[11]]14, wherein each of the plurality of [[the]] location measurement units transmits the measured mutual adjusted time difference of signals and [[its]] the accuracy of the adjusted time difference through one of said at least two adjacent base stations of said at least one pair corresponding to this location measurement unit to a base station controller.

22. (Currently Amended)   The apparatus timing system as claimed in claim [[18]]21, wherein the mobile user location center receives the measured mutual adjusted time difference of signals and [[its]]the accuracy of the adjusted time difference from the base station controller.

23. (Currently Amended)   The apparatus timing system as claimed in claim [[17]]20, wherein in selecting a group of path vectors, the mobile user location center

prevents a number of applications of each obtained adjusted time difference of the selected group of path vectors from exceeding a number of applications of this each obtained adjusted time difference of any other group of path vectors obtained from the set of all possible path vectors, and prevents values of path vector metrics of the selected group from exceeding values of path vector metrics of any other path vector group obtained from the set of all possible path vectors.

24. (Currently Amended) The apparatus timing system as claimed in claim 14, wherein said all possible paths refer to paths between base stations said first base station and said second base station are adjacent to a terminal which is an object of the measurement.

25. (Currently Amended) The apparatus timing system as claimed in claim 24, wherein the paths at least one path of said set of all possible paths between the base stations said first base station and said second base station adjacent to the terminal includes non-line-of-sight multipaths.

26. (Currently Amended) The apparatus timing system as claimed in claim 14, wherein, for paths of said set of all possible paths, the weights are provided according to errors of the measured mutual obtained adjusted time differences corresponding to the paths.